

## Nosocomial infections and antibiotic use in a swiss ICU during COVID-19 first surge

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Intensive care, by means of organ support, makes it possible to survive rapidly lethal pathologies. Management of these patients requires a high degree of invasiveness with frequent complications, including nosocomial infections. Their impact is not negligible as they increase length of stay, morbidity and mortality of patients. Diagnosis of nosocomial infections begins with a clinical suspicion based on non-specific criteria such as fever or the evolution of the inflammatory syndrome. Confirmation of the diagnosis and identification of a pathogen requires at least 48 hours in most cases. This diagnostic uncertainty and underlying clinical status favor empirical broad-spectrum antibiotic therapy that is higher than the actual incidence of infections. Fighting nosocomial infections is all the more complex as it depends on a multitude of factors intrinsic to patients and pathologies, but also extrinsic such as medications, equipment and environment.

The first wave of COVID-19 in 2020 was a major stressor for staff, institution and for our quality standards such as infection prevention. Faced with the multiplication of patients, we quickly noticed a widespread prescription of broad-spectrum antibiotics and a high suspicion of nosocomial infections. In order to clarify this feeling, we started this retrospective study on nosocomial infections and use of antibiotics in patients suffering from severe COVID-19 requiring invasive management with intubation. Given the small amount of information available in the literature during the first wave, the objective was above all qualitative to improve management of our patients in intensive care.

Our study highlights an increase in the incidence of nosocomial infections, but with a significant discrepancy between suspected and confirmed infections. Pathogens involved remain common without alarming signs for a selection of multiresistant bacteria. Given the incidence of nosocomial infections and the pathogens found, our antibiotic prescription seems inadequate in terms of spectrum width, frequency of administration and timing of introduction. Etiological tracks leading to an increase in nosocomial infections are multiple and could serve as a basis for specific preventive measures. Overprescription of antibiotics, although influenced by stressful situations such as this pandemic, also seems intrinsically linked to diagnostic difficulties we encounter and should motivate search for new diagnostic criteria and more specific biological markers.

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